Central Intelligence Agency
Office of the Deputy Director for Intelligence

1. DDCI ✓
2. D/OLL

Do either of you have any problem with my sending this response?

Regards

Alright with me
FBI will pucker over #3

17 JAN 1984

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AH ER 84-173

12 JAN 1984

MEMORANDUM FOR: Deputy Director for Intelligence

STAT

FROM: [redacted]
Director of Soviet Analysis

SUBJECT: Response to Senator Proxmire's 16 December Letter

Our response to Senator Proxmire's 16 December letter to you is attached. It provides answers to four questions submitted by Representative Wylie on follow-up to the JEC testimony. The answer to question number 3 on technology transfer was provided by OSWR.

STAT

[redacted]

Attachment:
As stated

DCI
EXEC
REG

L-272

Central Intelligence Agency

Washington, D.C. 20505

Executive Registry
84-173

Mr. Richard Kaufman
Assistant Director
Joint Economic Committee
Dirkson Senate Office Building
Washington, D.C. 20510

Dear Mr. Kaufman:

In his letter of 16 December, Senator Proxmire asked that we provide you responses to four questions on the Soviet economy that were submitted by Representative Wylie. The questions and responses are enclosed.

It is our understanding that these questions and answers will be included in the unclassified Record of your hearings on "The Allocation of Resources in the Soviet Union and China."

Sincerely,

Robert M. Gates
Deputy Director for Intelligence

Enclosure
As stated

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Question 1: How does the low level of Soviet military pay relative to the United States distort the comparison of the percentage of Russian military spending relative to its GNP? In other words, is the actual Russian military effort, relative to its GNP, even greater than that shown by the ratios because it pays its military personnel at a much lower rate than does the United States?

Answer: Our measure of the burden of Soviet defense spending--the ratio of defense expenditures to GNP--is 13-14 percent for 1982, the most recent year for which we have an estimate. Costs of Soviet military personnel account for only slightly more than one percentage point of that figure. Soviet prices of civilian and defense activities involve subsidies and taxes that could distort an estimate of this kind. Consequently, our procedures include an attempt to adjust our estimates of actual Soviet costs to give estimates more closely akin to real resource costs.

This is particularly true in the case of military personnel costs. The bulk of Soviet military personnel are conscripts who receive a very low wage. Our calculations of military personnel costs, however, take into account the housing, medical care, food, and other services provided these conscripts in addition to their wage and other monetary allowances. The net result is to cost conscripts at something close to the total wage received by unskilled labor in the Soviet Union, which is consistent with their low educational levels. Of course, these adjustments are themselves estimates and our limited information is more likely to lead to an underestimate, rather than an overestimate of military personnel costs. Our defense burden estimate may still involve some understatement because of our treatment of manpower costs, but it is likely to be small because of the adjustments we already make.

Question 2: There is some controversy over how technologically dependent the Soviet Union is. To what extent is the Soviet Union technologically dependent on the West? To what extent is the Soviet Union technologically dependent on the United States?

Answer: Western technology plays an important, if not critical, role in the Soviet economy. Imported technology has allowed the Soviets to reduce research time, engineering risks, and production costs in some key industrial sectors. Certainly the development of Soviet products such as high-quality fertilizers, drill bits, and third-generation computers was markedly accelerated with the aid of Western technology. In the aggregate, however, Soviet dependence on the West for imported technology is relatively small. Around 10 percent of new Soviet machinery and equipment is imported and last year, for example, one-third of imported machinery and equipment

(in value terms) came from Western countries. Soviet technological dependence on the United States is small. Less than one percent of all imported machinery and equipment came directly from the United States in 1982. The amount of American equipment actually reaching the Soviet Union, however, is undoubtedly higher because transshipments and illegal transfers are not identified in trade statistics.

Even though the overall share of machinery and equipment imported from the West is small, the Soviets rely on the West for the bulk of their imports in certain important areas. In 1982, Western machinery and equipment represented more than one-half of Soviet imports in the following categories:

- automotive production equipment;
- equipment for the timber, pulp and paper, and wood processing industries;
- road and roadbuilding machinery;
- drilling and prospecting machines and equipment;
- electric motors;
- equipment for the chemical industry; and
- mining equipment.

Other items high on the Soviet list of imported Western technology (30-50 percent of machinery and equipment imports) include equipment for the printing industry, metal rolling machinery, cable and wire, metal processing/finishing equipment, crushing/grinding/concentrating equipment, equipment for the construction materials industry, and instruments and laboratory equipment. Only in loading equipment, equipment for the construction materials industry, and roadbuilding machinery does the US share exceed five percent of total machinery and equipment imports, but in all three categories it is less than 10 percent. The Soviets also import other Western technology such as metal-cutting machinery, computers, and agricultural equipment that has certainly played an important role in key civilian and military industries even though their share in total Soviet imports is small.

Although the Soviet Union produces all of these categories of machinery and equipment domestically, imports are vital for a number of reasons. Soviet equipment does not normally measure up to Western equipment in terms of reliability, sophistication, durability, or usefulness for some special purposes. Since the Soviets do not report domestic production of these items on a base comparable either with their trade statistics or with Western data, the overall level of "dependence" on Western technology is impossible to measure.

We do know, however, that Western imports help advance Soviet technological progress and generally improve economic performance. Nevertheless, the Soviet economy is clearly capable of remaining viable in the absence of imports of Western technology.

Question 3: To what extent is the Soviet Union dependent on legal technology transfers from the United States as opposed to clandestine industrial espionage? (Assuming the Soviet Union is substantially dependent on the United States for technology, what percentage of that do they get in open, legal, free trade, and what percent is stolen?)

Answer: Soviet acquisition mechanisms include: legal means through open literature, through legal trade channels, and through student scientific and technological exchanges and conferences; illegal means through trade channels that evade US and Western (i.e., COCOM) export controls, including acquisitions by their intelligence services through recruited agents, industrial espionage, and overt collection techniques. While a large volume of technology is acquired by nonintelligence personnel, the overwhelming majority of what the United States considers to be militarily significant technology acquired by and for the Soviets was obtained by the Soviet intelligence services and their surrogates among the East European intelligence services. However, acquisitions by other Soviet organizations are important since it is often the combination of legally and illegally acquired technologies that gives the Soviets the complete military or industrial capability they need. Legal acquisitions generally have their greatest impact on the Soviets' broad industrial base, and thus affect military technology on a relatively long-term basis.

Over the past five years, Soviet legal and illegal trade efforts have concentrated on computers, microelectronics, air-breathing propulsion technology, guidance and navigation systems, underwater acoustical sensors, optical (including laser-related) technologies, and advanced manufacturing processes and equipment. Detected diversions and evasions over the past several years were particularly heavy in the field of semiconductor manufacturing equipment, reflecting the Soviets' intent to improve their entire electronic components industry.

Question 4: The machine tool industry is a very important component of the defense industrial base of the USSR and US. What is the rate of growth of the Soviet machine tool industry? Can anything be inferred from the type of machine tools being produced?

Answer: The machine tool industry is a key in Moscow's efforts to raise industrial productivity and to modernize its civilian and defense industries. To accomplish these twin objectives, the USSR has changed its production strategy in the machine

tool sector. Until the mid-1970s, much of the current output consisted of general purpose machine tools that were relatively inexpensive to produce, and the Soviets increased machine tool production by about three percent annually. Given the new needs for special purpose or complex production in a technologically changing society, however, the USSR began in 1977 to cut back the huge annual output of general purpose machine tools, and to expand production already initiated of specialized and automated machine tool equipment. This specialized equipment included numerically controlled (NC) or computer operated (CNC) machine tools, automatic lines, robots and manipulators, machining centers, and aggregate machining systems. These changes led to a 13 percent decline in the total number of machine tools produced during 1978-82 but, at the same time, the introduction of more expensive and complex equipment.

It is taking Moscow longer than the West to modernize its machine tool industry, however. The Soviets are impeded by the relative backwardness of the Soviet electronics and computer industries, the lack of trained computer programmers, engineers, and machine tool operators, the difficulties in integrating new equipment with old, and a state-operated traditional manufacturing system that often discourages innovation. The need to continue to service the existing machinery and to replace the aging portions of the huge Soviet machine tool industry also creates great pressure for continued large-scale production of conventional models. Hence, the USSR continues to produce three times as many conventional metalcutting tools as the US. Although the Soviet annual NC machine tool output of about 10,000 units equals that of the United States, advanced computer-operated multiaxis machines--now common in the West--make up only four percent of total Soviet production compared with 56 percent of the US total.

To help compensate for the slow progress in advanced machine tool production, the USSR is restoring to large-scale imports. In the first half of the 1970s, 80 percent of Soviet machine tool imports consisted of conventional or specialized equipment, but during the past decade advanced machine tools have figured heavily. For some models--machining centers, for example--imports even exceed domestic production. This equipment has helped the Soviets to start up or improve domestic civilian and defense production.

9/20/83

Congress of the United States

JOINT ECONOMIC COMMITTEE

(CREATED PURSUANT TO SEC. 5(a) OF PUBLIC LAW 304, 79TH CONGRESS)

Washington, D.C. 20510

December 16, 1983

Mr. Robert Gates
Deputy Director for Intelligence
Central Intelligence Agency
Washington, D.C. 20505

Dear Mr. Gates:

Representative Chalmers P. Wylie asked me to submit the following questions for you to answer for the Record of our hearing on "The Allocation of Resources in the Soviet Union and China:"

1. How does the low level of Soviet military pay relative to the United States distort the comparison of the percentage of Russian military spending relative to its GNP? In other words, is the actual Russian military effort, relative to its GNP, even greater than that shown by the ratios because it pays its military personnel at a much lower rate than does the United States?

2. There is some controversy over how technologically dependent the Soviet Union is. To what extent is the Soviet Union technologically dependent on the West? To what extent is the Soviet Union technologically dependent on the United States?

3. To what extent is the Soviet Union dependent on legal technology transfers from the United States as opposed to clandestine industrial espionage? (Assuming the Soviet Union is substantially dependent on the United States for technology, what percentage of that do they get in open, legal, free trade, and what percent is stolen?)

4. The machine tool industry is a very important component of the defense industrial base of the US and USSR. What is the rate of growth of the Soviet machine tool industry? Can anything be inferred from the type of machine tools being produced?

I will be most grateful if you would send your responses directly to the Joint Economic Committee to the attention of Richard Kaufman, Assistant Director.

Sincerely,

William Proxmire